Supplementary Table 1. Microsatellite loci used to genotype Finnish *Daphnia magna* populations. Primer sequences and reaction conditions are given in Colson *et al*. (2009). Loci listed in the same group were amplified and genotyped together. Additionally, groups five and six were mixed with groups three and two (respectively) before genotyping.

Locus	Repeat Unit	Tag	Group
WFes0001526	3 (TTA)	FAM	1
WFes0008397	2 (CA)	FAM	1
WFes0007834	2 (CA)	FAM	1
WFes0008608	3 (CAA)	HEX	1
WFes0002528	3 (GGT)	FAM	2
WFes0008344	2 (CT)	HEX	2
WFes0004775	3 (CAA)	HEX	2
WFes0003617	3 (GTT)	FAM	3
WFes0004208	3 (TGA)	FAM	3
WFes0008711	2 (GT)	FAM	4
WFes0009477	3 (GCT)	HEX	4
WFes0004614	2 (GT)	HEX	4
WFes0009449	3 (GTT)	FAM	5
WFes0007001	2 (CA)	HEX	6

Supplementary Table 2: Summary of age estimates in simulated datasets. Means, relative biases, and coefficients of variation were calculated from 200 replicate datasets simulated under each parameter combination

A. Estimated ages for simulated datasets using the P_k Distribution (τ)

5 loci			**Ne = 1000**					**Ne = 10,000**					**Ne = 1,000,000**		
TRUE	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**
Mean	9.08	31.59	98.82	201.71	726.06	12.89	25.36	96.91	239.68	833.81	12.48	25.94	101.26	222.95	834.42
Relative Bias (%)	-10.13	20.86	-1.19	-23.94	-37.73	22.42	1.42	-3.19	-4.31	-19.93	19.87	3.62	1.24	-12.13	-19.84
CV (%)	237.95	164.12	84.76	76.03	54.41	303.54	85.81	66.58	35.03	26.97	185.13	133.31	42.54	28.31	20.14
10 loci			**Ne = 1000**					**Ne = 10,000**					**Ne = 1,000,000**		
TRUE	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**
Mean	10.03	26.25	102.67	234.94	724.49	9.61	25.95	103.16	234.75	840.91	12.19	28.95	101.01	241.85	839.58
Relative Bias (%)	0.30	4.76	2.60	-6.41	-38.03	-4.06	3.66	3.06	-6.50	-18.92	17.97	13.64	1.00	-3.37	-19.11
CV (%)	107.43	104.73	62.40	50.30	39.75	111.24	76.55	41.79	26.04	17.18	144.6	93.66	39.39	21.57	13.09
20 loci			**Ne = 1000**					**Ne = 10,000**					**Ne = 1,000,000**		
TRUE	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**
Mean	11.05	28.29	99.16	224.61	709.43	13.09	24.88	98.5	239.57	820.51	12.69	28.03	101.45	239.78	832.81
Relative Bias (%)	9.50	11.63	-0.85	-11.30	-40.96	23.61	-0.48	-1.52	-4.35	-21.88	21.20	10.81	1.43	-4.26	-20.08
CV (%)	83.24	72.52	38.74	35.98	28.25	140.48	66.72	28.10	18.27	13.28	132.73	59.64	26.21	15.40	9.85

B. Estimated ages for simulated datasets using the Variance in Allele Size (σ^2_{AS})

5 loci			**Ne = 1000**					**Ne = 10,000**					**Ne = 1,000,000**		
TRUE	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**
Mean	9.08	31.62	101.06	211.91	797.28	12.89	25.39	97.37	251.97	965.47	12.5	25.97	102.57	230.24	1011.16
Relative Bias (%)	-10.13	20.94	1.05	-17.97	-25.43	22.42	1.54	-2.70	0.78	-3.58	20.00	3.74	2.51	-8.58	1.10
CV (%)	237.93	164.06	86.28	77.03	60.16	303.51	85.93	67.01	35.95	26.19	185.13	133.32	41.79	29.73	16.82
10 loci			**Ne = 1000**					**Ne = 10,000**					**Ne = 1,000,000**		
TRUE	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**
Mean	10.03	26.77	104.11	244.84	810.51	9.61	26.24	104.6	247.14	979.37	12.2	28.99	102.94	254.34	1006.76
Relative Bias (%)	0.30	6.61	3.95	-2.11	-23.38	-4.06	4.73	4.40	-1.16	-2.11	18.03	13.76	2.86	1.71	0.67
CV (%)	107.49	104.87	63.56	49.73	42.27	111.24	76.78	41.69	26.75	16.92	144.57	93.61	40.48	20.99	12.09
20 loci			**Ne = 1000**					**Ne = 10,000**					**Ne = 1,000,000**		
TRUE	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**	**10**	**25**	**100**	**250**	**1000**
Mean	11.05	28.32	100.37	232.84	804.54	13.09	25.01	100.31	251.81	968.28	12.71	28.07	104.24	253.72	1005.42
Relative Bias (%)	9.50	11.72	0.37	-7.37	-24.29	23.61	0.04	0.31	0.72	-3.28	21.32	10.94	4.07	1.47	0.54
CV (%)	83.24	72.52	39.49	37.54	31.87	140.46	66.69	28.20	18.78	12.93	133.28	59.69	25.85	14.35	7.66